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# The skull of milkfish, *Chanos chanos* Forsskal

Buri, Prasit

Aquaculture Department, Southeast Asian Fisheries Development Center

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# The skull of milkfish, *Chanos chanos* Forsskal

Prasit Buri

In view of future developments and success in the field of induced maturation and breeding of milkfish, *Chanos chanos* Forsskal, redescription of the skull of the said species is made to serve as one of the possible tools in identifying the effect of artificial propagation in terms of skeletal malformations.

In general the skull of milkfish is light in construction and appears fragile, however, rigidity of the cranium is achieved by the bony architecture having the following features:

— Dorsally (Fig. 1), the extremely flat and thin frontal plates (fr) form a wide triangular-shaped roof covering nearly the entire cranium. Anteriorly the vomer (v), mesethmoid (meth) and prefrontals (pfr) have lateral winglike extensions or projections. Protection over the eye cavity is achieved by the massive supraorbital (sup). Postero-medially the skull is extended by the two sets of brush-like supraoccipital crest (soc cr). Each epiotic (epo) has posterior projection for the attachment of the posttemporal. The frontal plates are extended posteriorly by the paired supratemporals (st) and the parietals (pa). A sensory canal transverses these flat bone elements and connects the left and right lateral line canal system together.

— Laterally (Fig. 2), the supraoccipital crest forms an angle to the frontal plane. Area of the prootic-basioccipital-exoccipital is flat and slightly concave. Beginning from the lower portion of the prootics (pro) the parasphenoid (psp) bends upward parallel to the horizontal axis of the vertebral column. Vomer, mesethmoid as well as the prefrontals which are loosely connected to the overlying frontals are mainly supported by the slender but rigid parasphenoid. Lateral wing-like portions of the prefrontals are perforated. Exoccipitals (exo) are prolonged posteriorly into a pair of flat pointed bones forming the roof over the cerebellum. Articulation for the hyomandibular (hm art) are formed by the sphenotic (spo), prootic (pro) and the epiotic.

— Posteriorly (Fig. 3), the pterotics (pto), exoccipital and the posterior wing of the supraoccipital bone are well discernible forming the posterior temporal fossa. The deeper but narrower lateral temporal fossa are roofed over by the frontals and the lateral wing of the pterotics. The epiotic is much perforated with grooves and enforcement ridges. Prootics and parasphenoid are not visible if viewed from this angle.

A further study on the skull of juvenile specimens has shown that the parasphenoid and the frontal plates form the most important bone elements of the cranium, basically responsible for structural strength of the skull. The disposal of skeletal ballast and the high swimming ability of the fish suggest the selective advantage of predation avoidance through speed and manoeuvrability rather than heavy armouring. Irrespective of the importance of the cranium morphology in systematic investigations the use of skull structure and its associated suspensory bones in supporting ecological observations should not be overlooked.

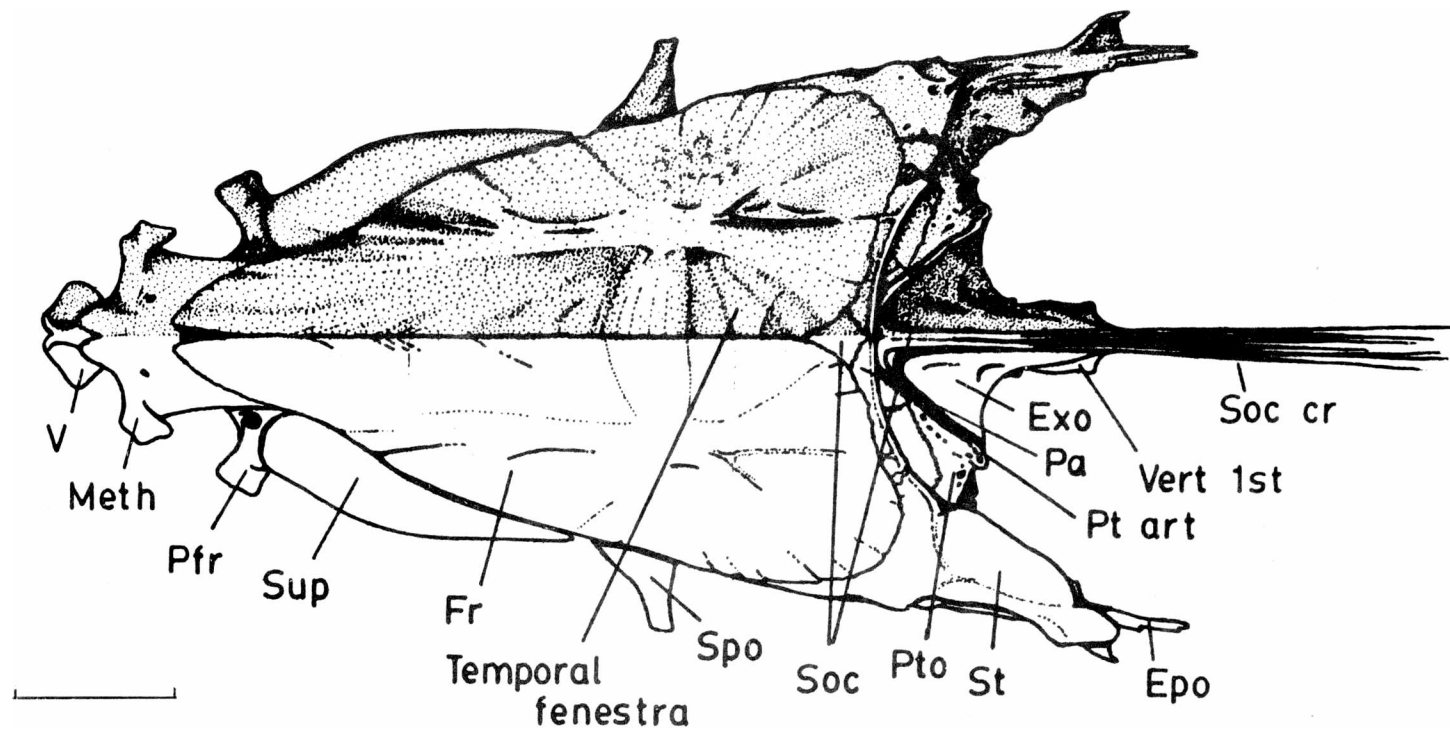


Fig. 1. Dorsal view of the skull of milkfish, *Chanos chanos* Forsskal. (Scale represents 1 cm.)

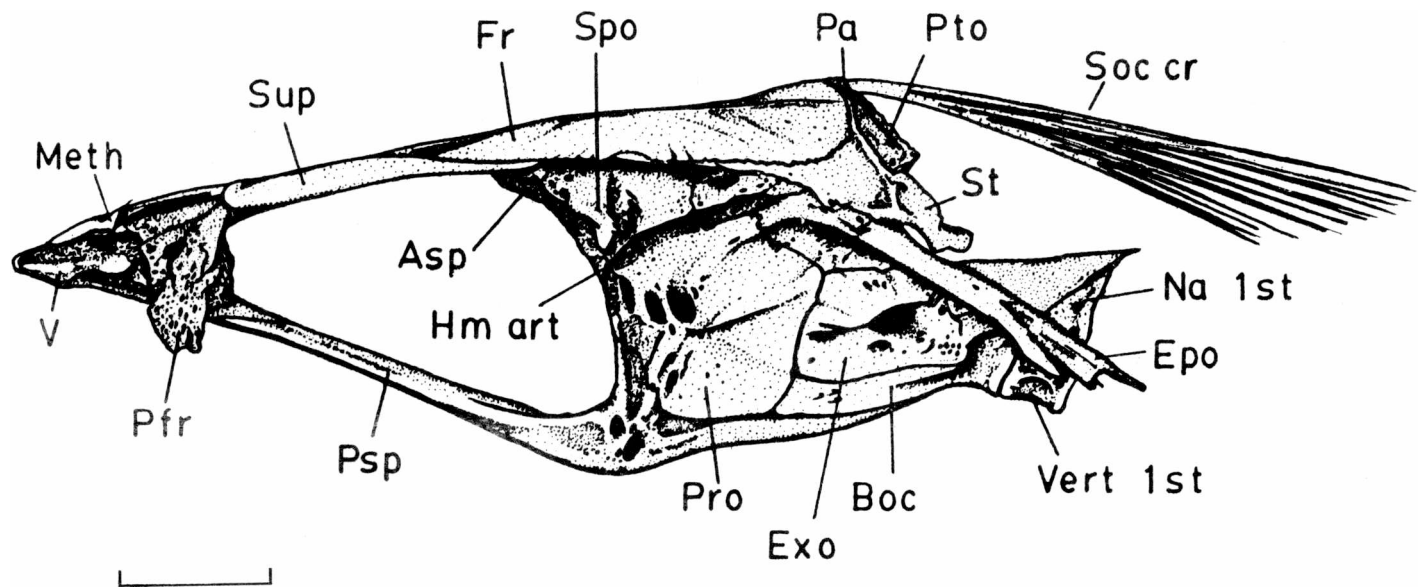


Fig. 2. Lateral view of the skull of milkfish, *Chanos chanos* Forsskal. (Scale represents 1 cm.)

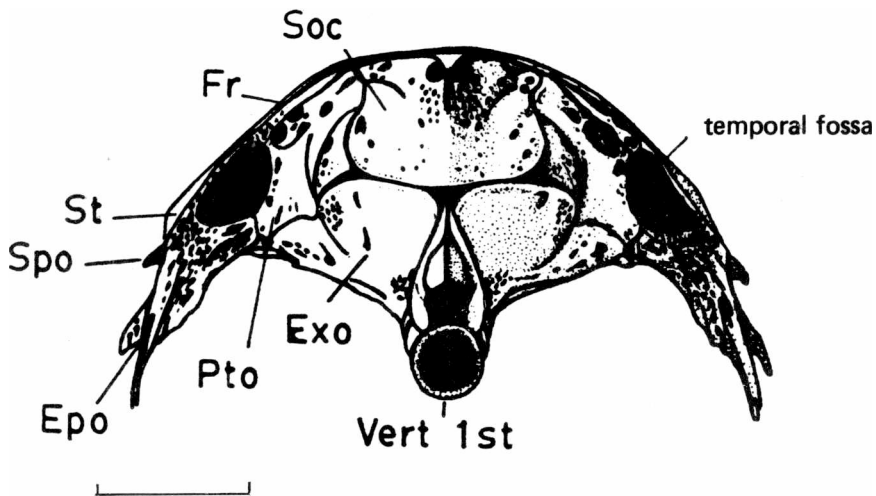


Fig. 3. Posterior view of the skull of milkfish, *Chanos chanos* Forsskal. (Scale represents 1 cm.)

#### Abbreviations used in figures

asp	alisphenoid	pto	pterotic
boc	basioccipital	pt art	posttemporal articulation
br art	branchial articulation	pfr	prefrontal
epo	epiotic	pro	prootic
exo	exoccipital	psp	parasphenoid
fr	frontal	soc	supraoccipital
hm art	hyomandibular articulation	soc cr	supraoccipital crest
meth	mesethmoid	spo	sphenotic
na	neural arch	st	supratemporal
pa	parietal	sup	supraorbital
		vert	vertebral centrum

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